

國立勤益技術學院九十二學年度研究所招生初試試題卷

所別：生產系統工程與管理

組別：經營管理

身分別：一般生

科目：生產管理

準考證號碼：

(考生自填)

考生注意事項：

一、考試時間 100 分鐘

二、不得帶計算機

試題：

一、 Briefly discuss the benefits of "*postponement*". (10%)

二、 A chocolate maker has contracted to operate a small candy counter in a fashionable store. To start with, the selection of offerings will be intentionally limited. The counter will offer a regular mix of candy made up of equal parts of cashews, raisins, caramels, and chocolates, and a deluxe mix that is one-half cashews and one-half chocolates, which will be sold in one-pound boxes. In addition, the candy counter will offer individual one-pound boxes of cashews, raisins, caramels, and chocolates.

A major attraction of the candy counter is that all candies are made fresh at the counter. However, storage space for supplies and ingredients is limited. Bins are available that can hold the amounts shown in the Table 1.

In order to present a good image and to encourage purchases, the counter will make at least 20 boxes of each type of product each day. Any leftover boxes at the end of the day will be removed and given to a nearby nursing home for goodwill. The profit per box for the various items has been determined as follows (Table 2):

Table 1	
Ingredient	Capacity
	(pounds per day)
cashews	120
raisins	200
caramels	100
chocolates	160

Table 2	
Item	Profit per box
regular	\$ 0.8
deluxe	0.9
cashews	0.7
raisins	0.6
caramels	0.5
chocolates	0.75

Present the formulation of Linear Programming model. (20%)

- 三、 A machine shop has the following batch of jobs that need to be scheduled so the makespan is minimized. Each job is processed first at Machine Center 1 and then at Machine Center 2. The job information is: (15%)

Job	Machine Center 1 Processing Time (days)	Machine Center 2 Processing Time (days)
A	4	3
B	2	7
C	6	5
D	4	5
E	3	4
F	5	1

- (a) Using Johnson's rule, develop a sequence for the machine shop that minimizes makespan.
- (b) Construct a diagram to determine the throughput time and idle time at each Machine Center.

- 四、 A cosmetics company uses exponential smoothing with trend to forecast monthly sales of its special face cream. At the end of June the company wants to forecast sales for July. The trend through May has been 10 additional boxes sold per month. Average sales have been 60 boxes per month. The demand for June was 68 boxes. The company uses $\alpha = 0.2$ and $\beta = 0.1$. Make a forecast including trend for the month of July. (15%)

- 五、 勤益傢俱公司所生產椅子須銷售至台中縣市五地區，包括太平、豐原、大雅、梧棲、南屯各地，已知各該地座標(x,y)分別為 (7,6) (6,9) (4,8) (2,4) (5,2)，每週裝運配銷量分別為 700、800、1000、400、600 張，請使用重力中心法，計算出設置配銷物流中心之座標(x,y) (10%)

- 六、 勤益傢俱公司生產椅子 A 產品，每日裝配需座框 900 組，座框係委由外包廠製造，該外包廠每日可生產座框 1,200 組，每組座框年持有成本 9 元，每次生產座框之準備成本 600 元，假設勤益公司與外包廠每年營運 300 日
- 計算經濟生產批量 Q_0 (5%)
 - 計算每年生產椅子 A 的次數 (5%)
 - 計算最大存量水準值 I_{max} (5%)

